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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/603,640
Filing Date: June 25, 2003
Appellant(s): MAY ET AL.

Timothy W. Markison
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/2/06 appealing from the Office action mailed 10/3/05.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 6,592,521 B1	Urbano et al.	7-2003
US 6,169,669 B1	Choudhury	1-2001

(9) Grounds of Rejection

Claims 1, 5-7, 8, 11, 12, 14-16, 20-23, 26, 27, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urbano et al. (U.S. Patent No. 6,592,521 B1) in view of Choudhury (U.S. Patent No. 6,169,669 B1).

As to claims 1, 5, 8, 11, 12, 16, 20, 23, 26, and 27, Urbano et al. discloses efficient battery use in a handheld multiple function device that includes using an uninterruptible power supply in a device that can employ either analog or digital control of the power supply (col. 4, line 59-col. 5, line 25, and col. 8, line 66-col. 9, line 11).

Urbano et al. does not disclose the specific steps of a method that employs a digital signal processor for controlling the power supply.

Choudhury, however, discloses specific steps to enable digital control of an uninterruptible power supply including monitoring (col. 1, line 50 – col. 2, line 14 and Fig. 3) at least one output for an overload condition ("overcurrent fault detector" 351 and col. 4, lines 59-61); monitoring a system voltage produced by a DC-to-DC converter for

a system low voltage condition (V+ and V-, col. 4, lines 13-15, and 35-39); monitoring voltage of the battery for a battery low voltage condition (V_B and col. 4, lines 30-34); and enabling one of a plurality of fail safe algorithms based on when one or more of the overload condition, the system low voltage; condition, and the battery low voltage condition are detected (col. 4, line 64-col. 5, line 19 and col. 8, line 58- col. 9, line 25).

Choudhury further explains that digital control is considered to be advantageous (col. 1, lines 30-50) because analog control systems have several drawbacks which include relying on components susceptible to aging and variation with environmental conditions, requiring a high component count, requiring circuit modification to change controller gain or change the control algorithm, susceptibility to electromagnetic interference, and susceptibility to component tolerances and temperature. Choudhury discloses that change in component value caused by aging or temperature may cause the problems of DC offset in output voltage, change in output operating frequency, and change in output harmonics.

It therefore would have been obvious to one of ordinary skill in the art at the time of invention to employ digital control methods, as taught by Choudhury, in the uninterruptible power supply system of Urbano et al., in order to avoid the problems that aging and temperature tend to have on analog controlled systems, as addressed in the cited passages of Choudhury.

As to claims 6, 14, 21, and 29, Choudhury further discloses (See Fig. 3) determining loading on an output of the DC-DC converter that is providing the system voltage [the DC Bus Caps (321) is equivalent to the DC-DC converter (see col. 4, lines 14-16), the loading is the battery charger (325)]; determining available power duration

based on the load and the voltage of the battery (this is determined by sampling I_B and V_B and V+ and V- at 329); and when the available power duration is less than a power available threshold, indicating the system low voltage condition (col. 5, lines 20-39 involving an underflow condition).

As to claims 7, 15, 22, and 30, Urbano et al. further discloses disabling a portion of the handheld multiple function device (col. 5., lines 50-56); storing current settings corresponding to execution of at least one functional algorithm processed by the portion of the handheld multiple function device; and continuing operation of the handheld multiple function device in a limited, low power consumption mode (col. 8, lines 3-20).

Claims 2, 9, 17, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urbano et al. (U.S. Patent No. 6,592,521 B1) in view of Choudhury (U.S. Patent No. 6,169,669 B1), and further in view of Barker et al. (U.S. Patent No. 3,609,504).

The combination of Urbano et al. and Choudhury includes a system in which a battery is connected to a battery charger further including the detection of overcurrent (overload condition) as addressed above.

Neither reference specifically teaches during an overload condition disabling the output for a predetermined period of time and, after expiration of the period of time, enabling the output.

Barker et al. however teaches these steps (Abstract, col. 1, lines 12-18 and col. 2, lines 27-33) in order to prevent burning of wiring and discharge of an auxiliary battery.

It therefore would have been obvious to one of ordinary skill in the art at the time of invention to perform these steps as taught by Barker et al. in the combination system of Urbano et al. and Choudhury in order to prevent damage to the circuitry and to prevent discharge of the battery, thereby maintaining the charge and thus, the lifetime of the battery.

Claims 3, 4, 10, 13, 18, 19, 25, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urbano et al. (U.S. Patent No. 6,592,521 B1) in view of Choudhury (U.S. Patent No. 6,169,669 B1), further in view of Patel et al. (U.S. Patent No. 5,018,148).

The combination of Urbano et al. and Choudhury includes a device in which an uninterruptible power supply is used as addressed above. Neither reference specifically discloses a method for storing current settings and shutting down the device.

Patel et al., however, discloses that even in uninterruptible systems, certain systems are susceptible to loss of data (Abstract, col. 1, lines 6-19) and therefore the invention is geared toward anticipation of a failure which is necessary for an orderly shut-down. This implies that current settings are stored (col. 4, line 51- col. 5, line 19).

It therefore would have been obvious to one of ordinary skill in the art at the time of invention to include additional these steps as taught by Patel et al., in order to ensure that the device containing an uninterruptible supply as taught by Urbano et al. and Choudhury, does not suffer from the loss of data in the event of a power failure.

(10) Response to Argument

Appellant's argument for traversal of the Examiner's rejection is that since neither reference of record suggests sensing for one of a low battery, overload condition, or system low voltage condition and initiating a fail-safe algorithm in response thereto, the combination of references fails to render the independent claims obvious.

Appellant further argues that since the independent claims have not been rendered obvious, the dependent claims are also not obvious.

The Examiner maintains that the limitations in question are taught by the combination of references and therefore that Appellant's arguments regarding all claims are not persuasive.

The Examiner relied on Urbano et al. to teach the use of an uninterruptible power supply in a handheld device. The Examiner did not rely on Urbano et al. to teach the limitations in question.

The Examiner relied on Choudhury to teach specific control methods for an uninterruptible power supply and provided motivation as to why one of ordinary skill in the art at the time of invention would have found it obvious to employ the control methods taught by Choudhury, in the uninterruptible power supply system of Urbano et al.

The Examiner previously cited sections of Choudhury to teach the limitations in question, namely (col. 4, lines 30-34, col. 4, line 64-col. 5, line 19 and col. 8, line 58- col. 9, line 25).

The Examiner continues to maintain that these limitations are present in the cited sections and finds nothing in Appellant's arguments, other than an assertion that they are not, to the contrary.

The Examiner agrees with Appellant's assessment of Figure 11 of Choudhury on page 9, 3rd paragraph of the Appeal Brief, which states, "In this mode. The DSP senses the battery current (Ib), the battery voltage (Vb) and V- with respect to ground. The battery voltage and the battery current are used to determine which of the three battery charge modes (e.g., trickle, bulk charge, and over charge) to initiate."

The Examiner considers this understanding to reveal that Choudhury teaches at least monitoring for an overload condition (a condition in which the sensed battery voltage and battery current would lead to the determination of the initiation of an over charge mode) and initiating a fail-safe algorithm in response thereto (an algorithm that controls a change in mode and/or controls the processes that occur during a changed mode, in this case the over charge mode). The discussion of control algorithms is addressed in the sections previously cited by the Examiner, namely col. 5, lines 3-6, that teaches that the control algorithm executed is described in conjunction with the equivalent control process illustrated in FIGS 10-13 (and therefore FIG 11), and col. 8, lines 64-67, which is the discussion corresponding to FIG 11, that teaches that the three signals, I_B, V_B, and V- are the three signals **sensed** for this **control algorithm.**

The Examiner believes his position to be further supported by col. 5, lines 3-6 (as mentioned above), which discloses that the control algorithm executed is also described in conjunction with the waveform of FIG. 4. and the flow charts of FIGS 5-9 (which includes FIG. 6).

FIG. 4 shows a sampling cycle with timer interrupts that are based on underflow. FIG 6, as addressed in the discussion column 6, line 47-col. 7, line 2 discloses that the interrupt service routine checks to determine if the interrupt was generated by an underflow, and if so then an underflow interrupt service routine (T1UFINT) is run.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Conclusion

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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6/15/06

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